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AFRL accepts delivery of prototype digital watermarking camera and software

by Fran Crumb, Information Directorate

ROME, N.Y.— The ability to protect copyrighted images in the virtual world has taken a step forward with the delivery of a digital watermarking camera to the Air Force Research Laboratory Information Directorate.

The camera is the result of the directorate's Dual Use Science and Technology effort with the Eastman Kodak Company, Rochester, N.Y. and the State University of New York at Binghamton. "The watermarking camera provides the first prototype of a camera that embeds usable information in invisible watermarks," said Richard J. Simard, technical advisor in the directorate's Multi-Sensor Exploitation Branch. "The technology can potentially accomplish image marking for source and content authentication, such as embedding information on an image's photographer, camera, location or date."

Digital images can easily be copied. Although copying may violate copyright and other laws, it is widespread - especially on the Internet. Watermarking helps eliminate this problem and provides hidden, value-added information. No longer will copyright violators have unchecked use of images, the military will be able to detect any image tampering and be able to trace ownership and distribution activities.

The digital watermarking camera is based on the technology of steganography - derived from the Greek term for 'covered writing.' It is a military communications tactic that dates back more than three millennia. During the era of the Roman Empire, military commanders would shave a messenger's head, write a message on the sheared scalp and, once the hair grew back, send the messenger through enemy lines. "Steganography for innovative image packaging and access to image products introduces a new paradigm to the imaging marketplace," said program manager Scott F. Adams. "Images can now contain value-added information that is carried with the image throughout its life."

Secure digital cameras can provide wide-ranging benefits to both the military and civilian sectors in such areas as verifying image integrity, embedding a photographer's and/or a camera's signature, automating image dissemination and distribution, and enabling covert communication. Demonstrations have been developed for postage stamp and identification card watermarking. Law enforcement agencies could utilize these techniques for developing driver's licenses that are quickly machine-read and verified. The techniques could also be utilized by law enforcement to authenticate that images taken at a crime scene are the same being shown in the courtroom, and have not been altered. @

